

## Appendix A

or "the first wave of informal and unofficially sanctioned telecommuters — formal approval of their immediate boss." Says Telecom Australia, "They're work as long as you get the project finished."

are program. It's from Remote Control in Carlsbad, CA.

using computer technology and techniques to better manage the telephone

Telemanagement includes every function the corporate telecommunication

to ordering of new circuits, from managing the corporate inventory of

the right number of operators to man the phones at the right time, etc.

ing on top of telephone systems, collecting and processing information.

the telephone. There are two sides to telemarketing — incoming and outgoing 800 toll-free IN-WATS numbers and local FX (foreign exchange) lines. Lines. An expanding range of telecom gadgetry is being developed to automatic dialers, voice processing technology and automatic call distributors. The

tex and transaction processing capabilities of voice processing gear can

ess Unit) serving Teletex users of other telematic services (using

s from a distance using networks supporting audio, video, and computer deconferencing to diagnose illness and provide medical treatment over a res. Used also in rural areas where health care is not readily available and Show in 1994, Southwestern Bell demonstrated telemedicine applications

n electronic stethoscope and a telepathology system that allows a pathol-

scope.

mission of digital or analog data which represents status information on a

providing both packet-switched and circuit-switched service to subscribers

inal service specified by the U.S. Department of Defense and implement-

arket data information subscription service operated by Telrate International

enhance security and other functions.

on platform. Teleos makes a programmable switch which can be controlled

000 and the ability to write software for it, its intelligent call distribution

pages before allowing them to go out.

and you do all day?" "Nothing. Just spent the day on the phone."

the eight things a telephone does, according to Understanding Telephone

the worldwide phone system.

by receiving a tone, called a dial tone.

nes — ringing, busy, etc.

ansmission to someone distant. It also changes the electrical signals to understand them.

pply to it.

ur call is finished.

nder \$50.

sound of the receiver. Something no phone should be without. Some increase volume by 10 dB, which is often not enough (especially if you're by AC/DC adapters. Newer ones are powered by nicad batteries. They

mail systems in which incoming callers are immediately directed to the

nalized greeting in the called party's voice and are prompted to leave a

for carrying voice signals. Defined by its ability to transmit signals in

ng the establishment of telephone communication in both directions

necting and switching phone lines. A European term for what North

**Telephone Frequency** Any frequency within that part of the audio frequency range essential for the transmitting speech, 300 to 3000 Hz.

**Telephone Line Simulator** Also called ring-down box. Ring down boxes, also known as CO simulators, are simple devices used for generating calls from a POTS line to a computer telephony system (or vice versa). When one side goes offhook, the ring-down box will "ring" the other side. When both sides are offhook, both sides are coupled together and the line is powered. Ring-down boxes are available with various options and configurations. These include the ability to provide dialtone to the caller side (required to test applications with modems, faxes, or other automated outdialing devices), caller ID, and disconnect supervision. They are generally available in one to four line sizes, although special configurations may support more. Ring-down boxes are used for giving demonstrations and testing. We use them in our test labs to testdrive new computer telephony systems.

**Telephone Management System** The term originally meant a system for controlling telephone costs by: 1. Automatically selecting lower-cost long distance routes for placed calls; 2. Automatically restricting certain people's abilities to make some or all long distance calls; and 3. Automatically keeping track of telephone usage by extension, time of day, number called, trunk used and sometimes by person calling and client or account to be billed for call. These days the term means those three functions plus a whole lot more, typically those associated with professionally managed corporate or government telecommunications expenses, including (but not limited to):

- Computerized inventory monitoring,
- Computerized traffic engineering and network design,
- Departmental telephone bill allocation and invoicing,
- Automated telephone directory, etc.
- Project tracking,
- Automated equipment and service ordering.

In short, all the functions of professional telecommunications management that can be automated or organized in some way on a computer. The telecommunications management system thus refers to the computer hardware and the software. For more on this subject see the latest June issue of TELECONNECT Magazine. See also CALL ACCOUNTING SYSTEM.

**Telephone Message Management System** TMMS. This IBM software product permits detailed personalized calling in the CBX II 9000 environment. Which sounds like voice mail to us. We stole this definition from a glossary Rollin' supplied us.

**Telephone Receiver** Telephone earpiece. Device that converts electrical energy into sound energy, designed to be held to the ear.

**Telephone Relay Service** TRS. A voice/data system that enables communications with the hearing impaired.

**Telephone Service Representative** TSR. Another word for agent — the person who answers the phone on an automatic call distributor. See AGENT.

**Telephone Set** A fancy name for a telephone.

**Telephone Set Emulation** The concept is simple: Emulate the proprietary electronic phone on a printed circuit card inside a PC. Let the PC do everything a human using the phone could do. Only the PC will do it more efficiently and the human will find it easier to use all his phone's features because the PC's screen is bigger and the PC's keyboard easier to use than the phone's keyboard. Attach the phone emulation card to voice and call processing cards, like voice synthesis, voice recognition, call processing. It's powerful concept. As I wrote this, a handful of telephone phone emulation cards had appeared. Within a little while, there won't be a phone worldwide that you won't be able to emulate on a printed circuit card you can drop into a vacant slot inside your PC.

**Telephone Set Management** Imagine you have a phone attached to your computer through a telephony board inside your computer. Now imagine that you pick up the phone and dial a number. If the company knows you have dialed a number and every button pushed on the phone. The advantage of this is obvious: You really want the PC to collect those digits, so it can, for example, add a price to each call and use them for monthly billing (lawyer, accountant, etc.). You also want to be able to re-dial those numbers by simply clicking on the number one you want, hitting Enter and bingo, you're redialing that number, without having to key it in again. This term, telephone set management, used to be called handset management.

Two of the early pioneers in the field of telephone set management, David Perez and Nick Nance of COM2001 Technologies in San Diego, defined telephone set management as "the ability for seamless integration with the phone (any 2500 set) and the modem / voice processing board and / or fax machine. The hardware must notify (send a signal or command) to the software when the phone is off hook or on hook. It must also notify the software when the user presses the numeric buttons on the phone. Ultimate integration would include additional types of button support as in: volume, hold, release, redial, conference, or any button on the telephone / fax / modem etc. The reason? Telephone integration offers true Computer Telephony integration. The ability to signal the handset and feature keys allows the user to continue to use their desktop phones but take complete advantage of the Computer Telephone software on their desktop for speed dialing, transferring, conferencing, voice mail, etc.

**Telephone Signaling Device** A gadget which indicates that the phone is ringing. May also be hooked up to lamps or over-

head lighting to cause those lights to flash when the phone is ringing.

**Telephone Tag** I call you. But you're not there. I leave a message. You call me back. But I'm not there. You leave a message.

**Telephony** The science of transmitting voice, data, video or image signals over a distance greater than what you can transmit shouting. The word derives from the Greek for "far sound." For the first hundred years of the telephone industry's existence, the word telephony described the business the nation's phone companies were in. It was a generic term. In the early 1980s, the

term lost fashion and many phone companies decided they were no longer in telephony, but in telecommunications — a more pompous sounding term that was meant to encompass more than just voice. The pomposity of the word may have added some value to the stock of telecommunications companies. In the early 1990s, as computer companies started entering the telecommunications industry, the word telephony was resurrected. And in a white paper on Multimedia from Sun Microsystems, the company said that telephony refers to the integration of the telephone into the workstation. For instance, making or forwarding a call will be as easy as pointing to an address book entry. Caller identification (if available from the telephone company) could be used to automatically start an application or bring up a database file. Voicemail and incoming faxes can be integrated with e-mail (electronic mail). Users can have all the features of today's telephones accessible through their workstations, plus the added benefits provided by integrating the telephone with other desktop functions. See also COMPUTER TELEPHONY.

**Telephony Access Module** See TAM.

**Telephony Interface Control** A Telephony Interface Control resource is any resource that interfaces with the telephone network (public or private). This is usually claimed as the primary member of a group.

**Telephony Server** A telephony server is a computer whose major function is to control, add intelligence, store, forward and manipulate the various voice, data, fax and e-mail calls flowing into and out of a computer telephony system. The traditional function of a telephony server is to move call control commands from client workstations on a LAN to an attached PBX or ACD. (This is what it does under the paradigm called "Telephony Services.") A telephony server can also be a voice response system. It can also be a fax on demand system. It can also be a conferencing device. It can also be switch. And it can be all these capabilities, which traditionally run on physically separate servers, all rolled into one machine, called generically a "telephony server." See TELEPHONY SERVICE APPLICATION PROGRAMMING INTERFACE and TELEPHONY SERVICES.

**Telephony Server Application Programming Interface**. TSAPI. Described by AT&T, its inventor, as "standards-based API for call control, call/device monitoring and query, call routing, device/system maintenance capabilities, and basic directory services." For a better explanation, see TELEPHONY SERVICES.

**Telephony Server NLM** Telephony Server NetWare Loadable Module. A product announced in early 1993 by AT&T. The Telephony Server NLM is an AT&T-made card sitting in a file server on a Novell LAN. The card connects directly to the ASAI (Adjunct Switch Applications Interface) port on the AT&T Definity PBX. Anyone with a PC on the network and an AT&T phone on their desk will be able to use telephone features, such as auto-dialing, conference calling and message management (a new term for integrating voice, fax and e-mail on your desktop PC). Novell/AT&T have announced that they intend to create open Application Programming Interfaces (APIs) third-party developers can work with. A Novell/AT&T example of what could be developed: A user could select names from a directory on his PC. He could tell the Definity PBX through the PC over the LAN to place calls to them. At the same time, a program running under NetWare would automatically send an e-mail to the people in the conference call. All participants would have access to both the document and the conference call simultaneously.

A Novell White Paper in Spring of 1993 said "Telephony Services represents a significant piece of NetWare's overall strategy of

providing a comprehensive set of integrated network services. Through the combining of Telephony Services for NetWare with the functionality of other network services such as fax, video, messaging and others, further gains are easily demonstrated. Today, organizations view the telephone and computer as essential parts of conducting daily business. In fact, they rely so heavily on the technology of these two instruments that productivity can often be jeopardized when access is interrupted. With such heavy reliance, the next stop in the technology evolution is to merge and integrate the capabilities of these two technologies to improve the return and benefits provided to customers.

"Telephony Services for NetWare provides benefits to three main customer segments. First, applications are being developed to provide increased productivity to everyday computer desktop users. Second, call-centers take advantage of this technology as it provides a right-sizing cost-effective solution. Finally, benefits will be available to telecommunications/IS administrators by providing the ability to reduce administrative costs through easier management of user databases.

"Computer-Telephone Integration (CTI) combines telephone and computer technology to provide access and control telephone functionality from a computer terminal. It combines the easy access and usable graphical interface of the computer desktop with the features of the telephone. CTI is not a new concept. Traditionally, however, CTI has only been available in a mini and mainframe computer environments. These solutions are expensive and can be cost-justified only in large call-center applications. Consequently, the penetration of CTI solutions has been very small.

"However, providing CTI in NetWare environment brings this technology mainstream. Not only does this solution provide a more cost-effective implementation, it also allows integration with the rich set of NetWare services. In the simplest example, a Telephony Services for NetWare application allows users to make a phone call by clicking on a name from a calling list displayed on a desktop computer and having the desktop computer dial the number. Possibilities exist for applications that will allow similar functionality with the addition of conference calling capability. Instead of clicking on a single name, the user can highlight a number of names, click on a conference-call icon and have the system place the calls to all parties. The benefits which are derived from the integration of telephony with other NetWare services is far reaching. As part of continued development efforts, applications are becoming available which allow desktop video phone calls. Callers can see each other and talk on the phone while simultaneously viewing and editing image documents.

"Other capabilities include integrating voice-mail, fax and e-mail into a single message-management application. Possibilities also exist utilizing number recognition technology to integrate computer database records with caller-id. Administrators can manage a single user database utilized by the computer network, the PBX and the voice-mail system.

"Telephony Services for NetWare takes advantages of client/server technology to provide a broad framework for creating first-party and third-party call-control applications. These applications answer the customer demand for integrated business tools and solutions. This technology provides a logical connection between the desktop computer and the telephone. The only physical connection is established between the PBX and a NetWare server. This architecture is cost-effective and efficient by utilizing a company or organization's existing equipment. The initial product deliverables include the following components:

- Client/Server
  - Telephor
  - PBX Driver
  - PBX Link
  - Passage
- "The Telephony NLM, an open API for models. The client or Telephony selling local of an addition handles com PBX or ACD your PC while PBX. You click Joe, click on which tells it phone heads server which Telephony Server which Telephony Server which Telephony Services conforming to According to a nents of Telephony PBX-to-NetWare call control, us tions include v Through speec initial products
- Client/Server
  - Telephony Server
  - PBX Driver
- "The Telephony an open PBX Driver API provides Client server co
1. Synchronized ID or ANI). You to see if it can fit to whoever is going All this saves as
  2. Integrated me: the scenario. You a screen list everything that comes down. Click. You maybe it's a voice you. Or, if you have called launch) in Messages are delivered. Junk the junk one
  3. Database transaction, movie times, etc. speech. The system and the data. Join them on computer telephone Once the caller has